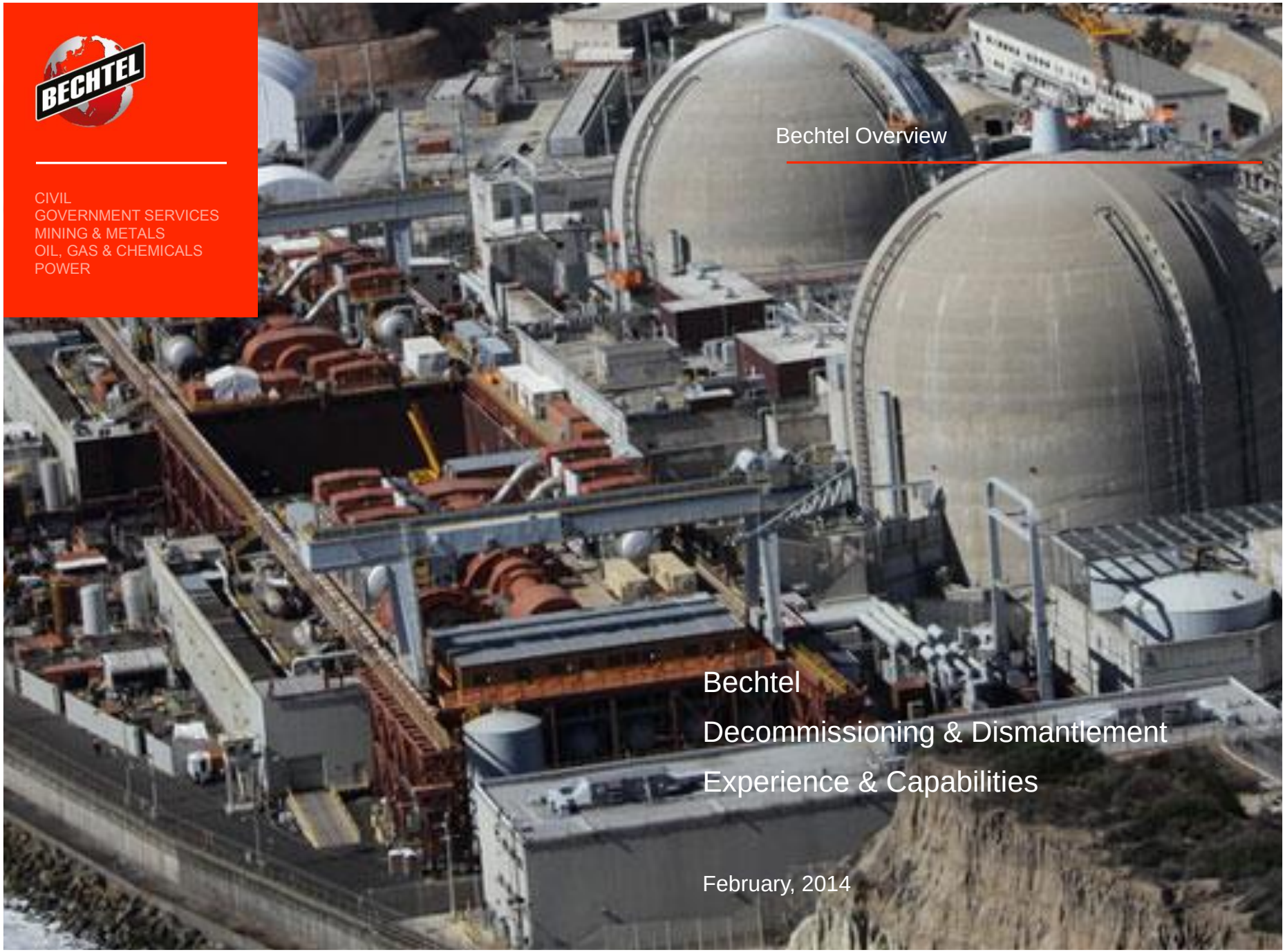


CIVIL
GOVERNMENT SERVICES
MINING & METALS
OIL, GAS & CHEMICALS
POWER

Bechtel Overview

Bechtel
Decommissioning & Dismantlement
Experience & Capabilities

February, 2014

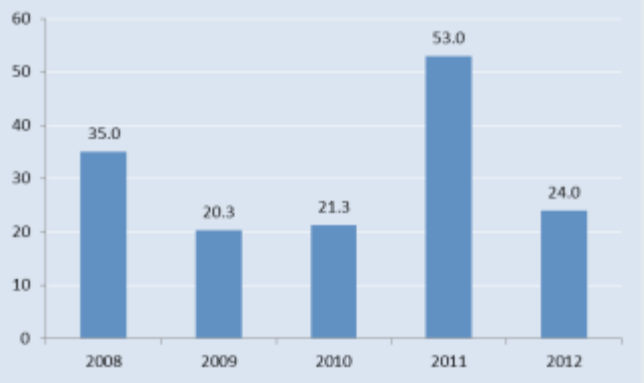
Who We Are

Bechtel… one of the world's most experienced EPC Contractors

- 115 years of experience/ privately owned
- 38 major offices worldwide/ 53,000 employees
- Named one of America's safest companies by *Occupational Hazards* magazine
- Over 74,000 MW of commercial nuclear projects
- Commercial D&D projects: SONGS U1, TMI, and CY
- DOE/DOD D&D of facilities since 1980s

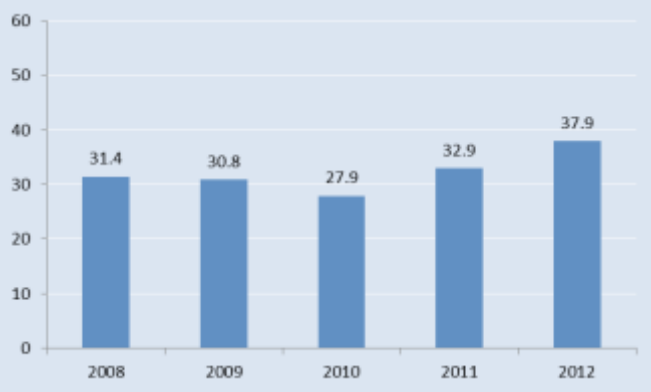
New Work Booked

In billions of U.S. dollars



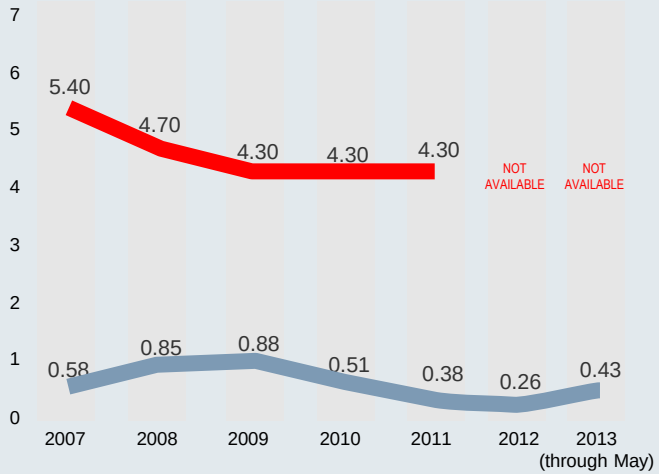
Revenue

In billions of U.S. dollars



Safety – A Core Value

Safety on the job
Number of **recordable incidents** per 100 employees per year



Safety on the job
Number **of lost-time accidents** per 100 employees per year

U.S. Industry Average ***(Bureau of Labor Statistics)***

Bechtel Nuclear ***(includes Joint Ventures and Subcontractors)***

Our Philosophy: Zero Accidents

In 2012:

- 80 projects finished the year without a lost time accident
- 6 projects reported 5+ million safe jobhours
  - Kwajalein Missile Range
  - Muscat
  - OM202
  - Pascagoula
  - Ivanpah
  - Angola LNG Feed
- 5 projects achieved 10+ million safe jobhours without a lost time injury
  - Savannah River
  - Las Bambas
  - Raz Al Khair
  - Bantrel
  - Watts Bar Unit 2

Quality – A Core Value

A Key to Customer Satisfaction

- Providing excellence that customers expect
- Getting the job done right the first time
  - Understanding and following core processes and procedures
  - Monitoring and being accountable for our work
  - Using the right tools and equipment for the job
  - Having a healthy questioning attitude
- Attention to the smallest details is the biggest part of the job
- Improving efficiency with Six Sigma
- Evidence of success – Majority of new work comes from repeat customers
- N-Stamp Certified

LRQA
Business Assurance

CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Bechtel Power Corporation
Bechtel Communications, Inc.
5275 Westview Drive
Frederick, Maryland 21703, USA

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

ISO 9001:2008
ANSI/ISO/ASQ Q9001:2008

The Quality Management System is applicable to:

Provision of Project Management, Engineering, Procurement, Construction, Construction Management, Start-Up, Commissioning, and Decommissioning Services for Power Generation, Transmission and Communication Projects.

This certificate forms part of the approval identified by certificate number UQA 0106385

Approval Certificate No: UQA 0106385/A

Original Approval: November 28, 1994
Current Certificate: December 1, 2012
Certificate Expiry: November 30, 2015

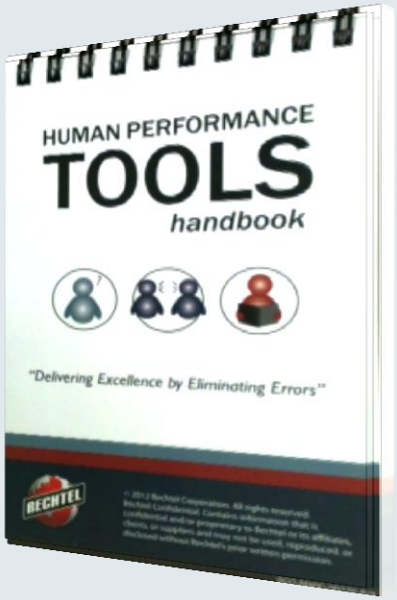
Issued by: Lloyd's Register Quality Assurance, Inc.

ANAB ACCREDITED

Quality + Safety = Success

Human Performance

- Comprehensive human performance tools training
- Uncompromising commitment to error elimination
  - Getting the job done right the first time
  - Understanding and following core processes and procedures
  - Monitoring and being accountable for our work
  - Using the right tools and equipment for the job
- Attention to the smallest details is the biggest part of the job
  - Maintain a healthy questioning attitude
  - Routine use of three-way communication
  - Validate assumptions prior to starting work
  - Prepare mentally and physically to perform each task
  - Work site review (walk down) to establish normal, off-normal, and environmental conditions that may lead to mistakes
  - Stop when unsure



Sustainability

Planning for the Future

- Support customers' sustainability goals
- Anticipate expectations of community and government
- Develop local workers career skills
- Maximize use of local contractors and suppliers
- Manage land resources
- Leadership in Energy and Environmental Design (LEED)

- Ivanpah Solar Electric Generating Facility

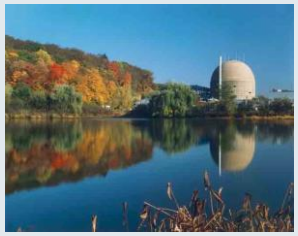
Bechtel Nuclear Experience

Bechtel D&D Experience

Hanford Plutonium Reactors
WASHINGTON—Developed the Interim Safe Storage process using various D&D techniques.

35 SGRS
11 Head replacements
7 EPUs

Connecticut Yankee
Connecticut—full-scope Decommissioning Operations Contractor for the single-unit 619-MW PWR.



SONGS Unit 1
CALIFORNIA—In addition to the large component removal work on SONGS 1, Bechtel performed the balance of the system, structure, and component dismantlement in our role as maintenance and modifications contractor.

Fukushima
JAPAN—Provided detailed plans and approaches related to decommissioning the damaged reactors.

K-25 Gaseous Diffusion Plant
TENNESSEE—At 144,000 m^2, K-25 was one of the largest D&D efforts to date, contaminated with highly enriched uranium.

Three Mile Island Unit 2
PENNSYLVANIA—Bechtel was immediately requested by the site owner to manage site stabilization, cleanup, and closure.

Chernobyl
RUSSIA—Provided experts in accident recovery, D&D, civil/structural engineering and project management.

D&D Experience and Resources

- Over 5,400 employees with commercial nuclear power, nuclear fuel cycle and Department of Energy D&D experience
- “Lead Contactor” from 4 of the major D&D of nuclear power plants
- Integrated project teams with expert support
- Over 2,000 engineering professionals
  - 63 PhDs
  - 711 registered professional engineers
  - 352 technical specialists
  - 278 code committee members
  - 1 ASME Fellow
  - 5 ASCE Fellows
  - 7 Bechtel Fellows

Function	Total
Construction	1,550
Contracts	160
Engineering	2,000
ES&H	190
Finance	140
HR	80
IS&T	140
Procurement	350
Project Controls	600
Project Management	125
Quality Services	120
ROW/Site Acquisition	100
Startup	130

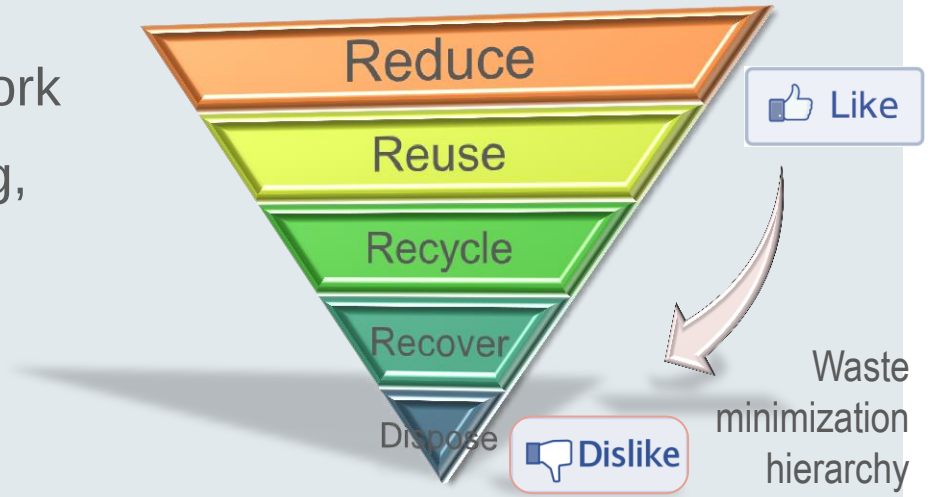
D&D Experience and Resources (cont.)

- Bechtel has performed D&D on both commercial and DOE nuclear facilities
- Bechtel has experience as the Decommissioning Operations Contractor (DOC) on several projects; full-scope EPC capability
- Experience managing the D&D subcontractors
- Decades of experience at SONGS including recent SGRs and LCR projects

Treatment and Disposal of Radioactive Waste

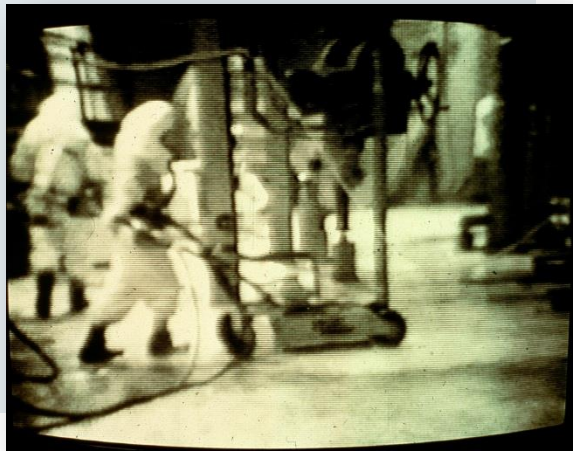
Planning

- Begin with the end in mind: everything becomes waste
- Apply waste minimization principles
- Identify necessary regulatory framework
- Infrastructure for storage, conditioning, packaging, and transportation
- Integrated Waste Management Plan
- Characterization
- Waste generation forecast
- Resource loaded - staffing, technology, funding



Demolition of the K-25 Gaseous Diffusion Plant in Oak Ridge, Tennessee

Decontamination of TMI-2 reactor building using recycled water in a high-pressure floor sprayer



Waste Generation

- Implement the Waste Management Plan
- Deploy waste management specialists
- Minimize double handling
- Think As Low As Reasonably Achievable - ALARA
- Apply the Waste Acceptance Criteria

Macro-encapsulated mixed waste (Pb & LLRW) boxes being grouted in place at the Oak Ridge disposal facility

Canisters for fuel debris ready for loading in the TMI-2 reactor vessel

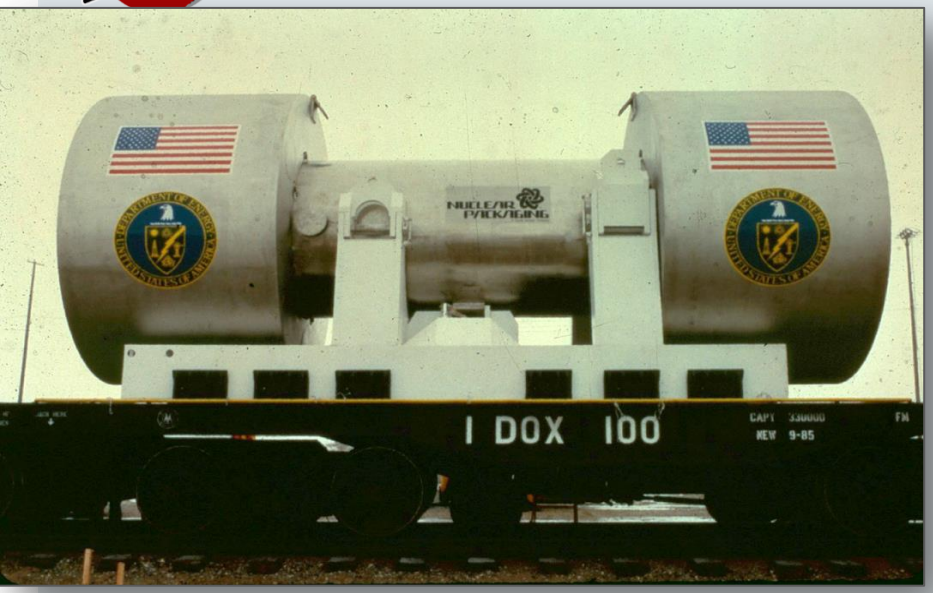
Waste Treatment

- Technology and infrastructure driven, on-site and off-site
- Volume reduction or increase
- Waste form stability/durability
- Package for disposal
- Regulator and support agency involvement
- Think ALARA

Cement solidification of sludge at Oak Ridge National Laboratory

Loading High Integrity Container with TMI-2 EPICOR II spent resin into shipping cask

Waste Disposal



Shipping cask for TMI-2 fuel debris on flatbed rail car

Shipping cask with Submerged Demineralizer System spent resin on flatbed truck

- Duration of storage prior to disposal
- Consider means, mode, and route of transportation
- Communication with stakeholders
- Availability of disposal capacity when needed
- Special classifications or waivers